

MCF 3M  
Test Review Ch 4

Opener

Solve for the zeros of the following functions

i)  $f(x) = -x^2 + 3x + 10$

ii)  $f(x) = 2x^2 - 7x - 18$

Mar 29-8:18 AM

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Test Review Ch 3&4

Opener

Solve for the zeros of the following functions

i)  $f(x) = -x^2 + 3x + 10$   
 $f(x) = -(x^2 - 3x - 10)$   
 $f(x) = -(x^2 - 3x - 5(x+2))$   
 $f(x) = -(x+2)(x-5)$   
 -2 and +5

ii)  $f(x) = 2x^2 - 7x - 18$   
 $= 2x^2 + 3x - 12x - 18$   
 $= x(2x+3) - 6(2x+3)$   
 $= (2x+3)(x-6)$   
 $-\frac{3}{2} + 6$

A/M  
-36  
-12 + 3  
2x+3 = 0  
2x = -3  
x = -3/2

Mar 29-8:18 AM

State the number of zeros in the following functions

i)  $f(x) = -2(x+3)^2 - 6$

ii)  $f(x) = (x+3)(x-3)$

iii)  $f(x) = 25x^2 + 40x + 16$

Mar 29-8:25 AM

State the number of zeros in the following functions

i)  $f(x) = -2(x+3)^2 - 6$

ii)  $f(x) = (x+3)(x-3) = 2 \text{ zeros}$

iii)  $f(x) = 25x^2 + 40x + 16 = 1 \text{ zero}$   
 $(5x+4)^2$   
 Perfect square

0 zeros  
b/c vertex below x axis and points down

Mar 29-8:25 AM

When does a rocket modeled by the function  $f(x) = -2x^2 + 10x - 6$  reach its maximum height? When does it reach 3m?

p.226 q.7-11  
p.254 q.5-10  
p.256 q.4-6, 8,10

Mar 29-8:27 AM

### Tools Quadratics

Roots → Sub into Standard form

1) Decomposition A/M

2) Quad Formula

Zeros → 1) Decomposition  
 2)  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  if non-factorable

$\frac{s+t}{2}$  f(h/k)

Vertex

1)  $\frac{s+t}{2} = X_{\text{Vertex}}$

2) Complete the Square

Oct 19-9:57 AM

When does a rocket modeled by the function  $f(x) = -2x^2 + 10x - 6$  reach its maximum height? When does it reach 3m?

$$f(x) = -2x^2 + 10x - 6$$

$$f(x) = -2(x^2 - 5x) - 6$$

$$f(x) = -2(x^2 - 5x + \frac{25}{4}) - 6$$

$$f(x) = -2(x - \frac{5}{2})^2 - \frac{25}{2} - 6 = \frac{25}{2}$$

$$f(x) = -2(x - \frac{5}{2})^2 + \frac{25}{2} - 6$$

$$f(x) = -2(x - \frac{5}{2})^2 + \frac{25}{2} - \frac{12}{2}$$

$$f(x) = -2(x - \frac{5}{2})^2 + \frac{13}{2}$$

$$(\frac{5}{2}, \frac{13}{2}) \quad (2.5, 6.5)$$

The rocket reaches a maximum height of 6.5m at 2.5 sec.

ii)  $0 = -2x^2 + 10x - 6$

$$y = 3$$

$$3 = -2x^2 + 10x - 6$$

$$0 = -2x^2 + 10x - 9$$

$$0 = -2x^2 + 10x - 9$$

Vertex?

$$0 = 2x^2 - 10x + 9$$

$$a = 2$$

$$b = -10$$

$$c = 9$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{10 \pm \sqrt{100 - 72}}{4}$$

$$x = \frac{10 \pm \sqrt{28}}{4}$$

$$x = \frac{10 \pm 2\sqrt{7}}{4}$$

$$x = \frac{5 \pm \sqrt{7}}{2}$$

The rocket reaches a height of 3m at  $\frac{5 + \sqrt{7}}{2}$  and  $\frac{5 - \sqrt{7}}{2}$  sec.

When Finished: Complete p. 1-8 p.155

Mar 29-8:27 AM

$$f(x) = 2x^2 + 3x + 1$$

$$f(x) = 2(x^2 + \frac{3}{2}x) + 1$$

$$f(x) = 2(x^2 + \frac{3}{2}x + \frac{9}{16} - \frac{9}{16}) + 1$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{9}{8} + 1$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{18}{16} + \frac{16}{16}$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{2}{16}$$

$$f(x) = 2(x + \frac{3}{4})^2 - \frac{1}{8}$$

$$(-\frac{3}{4}, -\frac{1}{8})$$

Mar 29-10:48 AM

$$f(x) = \frac{1}{2}x^2 + 5x - 3$$

$$f(x) = \frac{1}{2}(x^2 + 10x) - 3$$

$$f(x) = \frac{1}{2}(x^2 + 10x + 25 - 25) - 3$$

$$f(x) = \frac{1}{2}(x + 5)^2 - \frac{25}{2} - 3$$

$$f(x) = \frac{1}{2}(x + 5)^2 - \frac{25}{2} - \frac{6}{2}$$

$$f(x) = \frac{1}{2}(x + 5)^2 - \frac{31}{2}$$

Mar 29-10:53 AM

$$C(t) = 0.2t^2 - 10t + 650$$

$$0.2(t^2 - 50t) + 650$$

$$0.2(t^2 - 50t + 625 - 625) + 650$$

$$0.2(t - 25)^2 - 125 + 650$$

$$0.2(t - 25)^2 + 525$$

$$f(x) = a(x - h)^2 + k$$

$$(25, 525)$$

At 25 cars the cost to make each car is minimized to \$525.

Nov 1-7:33 AM